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State of Utah
DEPARTMENT OF NATURAL RESOURCES

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August 4, 2008

Chris McCourt, Manager
Alton Coal Development, LLC
463 North 100 West, Suite 1
Cedar City, Utah 84720

Subject: Technical Review, Alton Coal Development, LLC, Coal Hollow Mine Permit Application Package, C/025/0005, Task ID #2910, Outgoing File

Dear Mr. McCourt:

We have conducted an initial technical review of your application (dated June 14, 2007 with supplemental information received January 24, 2008) for a 635-acre surface coal mining operation near Alton, Utah. Several deficiencies were identified with the permit application package (PAP). They are attached. Our technical analysis will follow, separately. In accordance with R645-300-131.100, the Division requests that you modify your application to address these deficiencies.

Priscilla Burton at the Price Field Office has been assigned as the review team lead. Please contact Ms. Burton at (435) 613-3733 or myself (801) 538-5325 with your questions.

Sincerely,

Daron R. Haddock

Daron R. Haddock
Permit Supervisor

PWB/an
Enclosure
cc: Price Field Office
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UTAH DNR OIL, GAS & MINING

DEFICIENCY LIST
Task ID #2910

PB= Priscilla Burton
DD= Dave Darby
JH= Joe Helfrich
JS= Jim Smith
WW = Wayne Western

R645-103-234.100, The application must include the necessary approvals for road relocation from the authority with the jurisdiction over the public road and from the authority with jurisdiction over the easement for the relocated portion of the public road. [PB]

R645-103-235, Should the Swapp Ranch be determined to be within 300 feet of the mine permit boundary, the application must include a written waiver for mining within 300 feet of a dwelling. •The Dame lease included in Exhibit 2 of Appendix 1-2 confidential volume provides right of entry to adjacent land, but does not clarify that the owner has the legal right to deny mining closer than 300 ft. to the dwelling. [PB]

R645-300-121.100 An affidavit of publication needs to be included in the Application. [JS]

R645-300-141, The application must identify the legal description of the land designated as permit area. [PB]

R645-301-112.230, The application indicates that the company will be responsible for the abandoned mine fee, but the Rule requires that a person be designated. Please provide a name of the person who will be responsible for paying the abandoned mine fee. [PB]

R645-301-112.600, Define BLM coal ownership in the legend of Dwg. 1-4. Currently, the legend indicates "no marking" to be BLM owned coal, but "hatch marking" has been used to indicate BLM land on the drawing.• Dwg. 1-3 should clearly show the boundary between leased and unleased land owned by Pugh. [PB]

R645-301-112.700, Provide MSHA numbers for mine associated structures. [PB]

R645-301-112.800, The Pugh lease includes coal and surface located east of the proposed permit area. This adjacent interest should be declared in the application, Section 112. 800. [PB]

R645-301-114.100, Exhibit 1, the Pugh lease, was signed by Burton Pugh, but not by Roger Pugh or Margaret Moyers who together own 59.50% of the mineral interest beneath Burton Pugh surface (Section 112.500). Please explain why all mineral owners are not

signatories to the lease.• Please indicate the date that the Dame lease was recorded with the Kane County recorder. [PB]

R645-301-115.300, The application must indicate whether the Swapp Ranch is within 300 ft. of the permit area and illustrate the distance on a map of a scale 1 inch = 100 ft. [PB]

R645-301-121.200, Table of Contents for Chapter 3 is not completed for Appendices and Drawings• There should be a cover page for the soils analysis located in Appendix 2-1 to indicate that they are Appendix C of Appendix 2-1. • The Energy Laboratories, Inc reports found in Appendix 2-1 for CH-01, CH—03, CH-06 do not include water extractable Selenium which was analyzed and reported for these same samples in Appendix 6-2. Please provide the Energy Laboratories, Inc. water soluble selenium analysis in Appendix 2-1 or reference the location of the information in Appendix 6-2. • Energy Laboratories sample ID "B07110148-009" for Client Sample ID "Box 13 CH 5 Below Coal" does not match the client ID listed in the sample identification table for "Box 13 CH 5 Below Coal." A similar circumstance occurs with Energy Labs sample ID "B07110148-010" for Client Sample ID "CH-03, Above Underburden". [PB] •The Applicant cannot use "Not Applicable" to state how they met the requirements of the Utah Coal Rules. The Applicant must state that features like previously mined area and man-made features are not present rather than those items are "Not Applicable". • The Applicant was not consistent with the description of the road surface. In Section 534.100-200, the Applicant stated that eighteen inches of crushed rock or gravel would be used for road surfacing. On Drawing 23, the Applicant does not list eighteen inches of road surface and states that gravel will be placed as needed. [WW] •The applicant needs to present data and information that supports all conclusions and assertions in a clear and concise manner. Data and other information can be presented and discussed and analyzed in appropriate locations, and then other sections referenced to those sections, rather than repeatedly presenting broad assertions and generalizations. • The Applicant must include on the land-ownership map (dated November 30, 2006 and located at the end of Chapter 1, Appendix 1-3, Exhibit 3) the color-key for National Forest, Private, and National Park lands. • The application states in Section 727 that well Y-61 has a borehole diameter of 8.625 feet; this must be corrected.• The applicant states that as ground water migrates through the shallow, fine-grained alluvial sediments in the proposed Coal Hollow Mine permit and adjacent area (most notably in Sink Valley), the quality of the water are naturally degraded: Appendix 7-1 is referenced for this information. The application needs a map or drawing that uses Stiff diagrams or some similar representation that will clearly show this degradation. • The surface-water baseline discrepancies between Section 724.200, Drawing 7-2, Table 7-5, and the Division's database, as outlined in the following table, need to be resolved. [JS]

Baseline Monitoring Sites	Described in Section 724.200	Listed in Table 7-5	Shown on Drawing 7-2	Data in Database
SW-1	√		√	√
SW-7	√		√	√

SW-10			√	√
SW-18			√	
BLM-1		√	√	√
Lamb Canal			√	√

R645-301-131, Please provide the name and contact information for the laboratory providing soils report dated 042407 under work order C070402276. [PB]

R645-301-231.100, Page 4-1 of Appendix 2-1 suggests that poor soil is indicated by pH greater than 8.5, EC less than 4.0, and SAR less than 4. These latter two criteria (EC, SAR) do not reflect the criteria for poor soil described in Table 4-1, which does reflect the UDOGM soil suitability criteria. Please correct the narrative accordingly, so that the basis for subsoil suitability and salvage is clear. [PB]

R645-301-234.230, The Applicant must describe the stockpile interim seed mix by species and planting rates. [PB]

R645-301-232.500, Commitments made concerning topsoil and subsoil sampling in Sec. 232.500; Sec. 5, pg. 5-3, App. 2-1; and Sec. 232.720 are appropriate, but in each case, the commitment should include the rate of sampling, i.e. number of samples to be taken by ton or by cubic yardage moved. • Overburden monitoring described in Sec. 5, pg. 5-3, App. 2-1 should include SAR analysis. [PB]

R645-301-234.230, The replacement of the topsoil and subsoil on the excess spoil is described in Sec. 528.310 on page 5-39. The timetable for reclamation provided in Section 542 is specific about the mined out area, but not the spoil pile. The application should specify that seeding and mulching of the excess spoil pile will be contemporaneous with the staged approach to building the pile. [PB]

R645-301-242.200, Section 242.110 should indicate that the slopes will be roughly graded, rather than a smooth surface, prior to subsoil and topsoil application. [PB]

R645-301-244.100, The application must describe the use of surface roughening, wood fiber mulch and tackifier on all stockpiles (spoil, topsoil and subsoil piles) •Section 242.120 (b) must describe seeding, and an application of wood fiber mulch and tackifier immediately following topsoil application, regardless of season. • Section 244.200 must describe the mulch application by type of mulch, application method, and application rate for each post mining land use. [PB]

R645-301-244.200, Section 242.120(b) of the application states that the topsoil surface will be disced prior to seeding in most instances, but that compacted areas will be treated with ripping. How will the compaction be measured and determined? [PB]

R645-301-244.320, The commitment to repair rills and gullies provided in Section 244.320 (b) must include replacement of topsoil and reseeding or replanting. [PB]

R645-301-321.200, Vegetation information pertaining to the county road realignment should be included in the application as adjacent area. [JH]

R645-301-322, Threatened, Endangered, and Candidate plant and animal species for Kane County are included in Table 3-35. For each species listed in Table 3-35, provide a brief narrative describing surveys and the rationale for each species absence from the permit area. i.e. MSO protocol and survey results. [JH]

R645-301-322, Fish and wildlife information pertaining to the county road realignment should be included in the application as adjacent area. [JH]

R645-301-333, The data obtained from comparing the leks and roost sites indicates that there are sites with enough similarity that could be used for breeding and roosting areas. The applicant needs to include a methodology for relocating the birds to these alternative sites in the Alton Sage-Grouse Habitat Assessment and Mitigation Plan. • Page 20, paragraph 1, The applicant needs to describe how the "Conservation Area will be enhanced for Sage-Grouse especially during the breeding season." • Page 20, paragraph 3, "Intact sagebrush sites will be cleared of all young Juniper trees", these areas need to be identified. •Page 20, paragraph 3, "Juniper woodlands surrounding intact stands can be cut back to increase patch size and the amount of area that has potential for nest site selection by hens," there areas need to be identified on a vegetation map and quantified in terms of acreages. • Page 21, paragraph 3, "Long term mine plans will remove hundreds of acres of juniper woodlands". The applicant needs to perhaps quantify this statement. How many acres per year will be removed for the development of Sage-Grouse habitat? Areas need to be listed in the application and delineated on a vegetation map. [JH]

R645-301-342, Page 23, paragraph 3, the applicant needs to describe the mechanical treatment for controlling invasive species. • Page 10, Habitat connectivity, the applicant needs to provide an update on the status of juniper removal perhaps in terms of acres of restored habitat and a map delineating the restored areas. • What is the projected time frame for providing a corridor that would connect the two populations. Endangered and Threatened Species • Page 9, Predator control paragraph 3, the applicant needs to provide an update on the status of predator control arrangements. [JH]

R645-301-358, age 22, paragraph 3, "The Alton Sage-Grouse population will be enhanced by importing birds from nearby populations that are relatively large and stable, the applicant needs to include a time table, number of birds and appropriate clearances from DWR, USFWS, BLM. • Page 22paragraph 3and page 22paragraph 1, The applicant needs to support this proposed population enhancement by differentiating the populations and providing a time table for capturing and relocating the birds as noted in the previous comment. • Page 9, Brood Rearing habitat improvement, the Division is requesting the applicant to provide an update on the status of the development of the alfalfa field in the

Sage-Grouse Distribution and habitat improvement Alton, Utah. • Page 9, Brood Rearing habitat improvement paragraph 2, has the research on plant insect relationships been completed? • Page 9, Predator control paragraph 3, the applicant needs to provide an update on the status of predator control arrangements. • Page 10, Habitat connectivity, the applicant needs to provide an update on the status of juniper removal perhaps in terms of acres of restored habitat and a map delineating the restored areas. • What is the projected time frame for providing a corridor that would connect the two populations. • The application needs to include mine water consumption calculations in acre-feet per year for the four endangered fish species included in the recovery program. • The applicant needs to provide information on Bald and Golden Eagles. i.e. narrative about each species including their status within ½ mile of the proposed disturbed area. •The information on page 3-40 needs to include protection and enhancement measures for the wetland areas.•The applicant needs to include a narrative that describes how impacts to the habitat for the high value wildlife species, black bear, rocky mountain elk, and mule deer will be mitigated or enhanced during the active phase of mining operations. The applicant could describe the beneficial uses to the referenced species that have been achieved to date by the removal of the Pinyon Juniper. A comparison of acreages should be included, disturbed area footprint versus habitat enhancement, in the application. • The application needs to include vegetation and fish and wildlife information pertaining to the road realignment for the permit and adjacent areas. [JH]

R645-301-323, The application needs to include the following maps: Affected Area Boundary Maps; Reclamation Monitoring And Sampling Location Maps; Reclamation Treatments Maps. [JH]

R645-301-333, Section, 358.530, page 3-74, states that "The Coal Hollow Project will fence, cover, or use other appropriate methods to exclude wildlife from ponds which contain hazardous concentrations of toxic forming materials". In the event other appropriate methods are deemed necessary the application needs to include a commitment to consult with DOGM, biologists from the DWR and other appropriate entities to determine the scope of other appropriate methods to exclude wildlife. [JH]

R645-301-352, -301-553, Section 341.100 on page 3-44 states that "A detailed schedule and timetable for the completion of each major step in the mine plan has been included in Chapter 5 of the MRP." Chapter 5 includes a detailed description of each step in the surface mining process. However there are no schedules or timetables included in chapter 5 that are pertinent to contemporaneous reclamation. Chapter 5 needs to be revised to include a detailed schedule and timetable for each major step in the mine plan. [JH]

R645-301-412, -301-413, -301-414, -302-270, -302-271, -302-272, -302-273, -302-274, -302-275, If the county road is not reconstructed within the permit area, the application needs to include documentation from the County and the landowners that addresses the reclamation of the county road in the permit area after mining has been completed. [WW, PB] •Section 341.230, page 3-53 of the application states that mulch will not be applied

to the reclaimed pasture land. The applicant needs to provide a rationale for not using the mulch in this area. • Table 7 identifies the characteristics of the meadow and dry meadow plant communities as being conducive to sub-irrigation. Section 6.4 states that "the topographic characteristics of most lands within the project area are compatible with flood irrigation techniques". The application will need to include a mitigation plan for restoring water to these areas and might consider including the post mining land use of a "developed water resource." [JH]

R645-301-423 ***et seq,*** The Applicant refers to pages 8 – 10 of the NOI, Limitations and Test Procedures, (Appendix 4-2) for compliance with R645-301-423, the air pollution control plan, and R645-301-423.100, the air quality monitoring program to evaluate the effectiveness of the fugitive dust control practices proposed and R645-301-423.200, the plan for fugitive dust control practices. This is unacceptable, because, the NOI does not require regular monitoring of visible emissions by the Applicant. The NOI and the Air Quality Approval Order are tools used by the DAQ to promote compliance with the Clean Air Act. The terms of the NOI are monitored by the DAQ and enforced by the DAQ. Since the monitoring and evaluation requirements of R645-301-423 et seq, for surface mines producing greater than 1,000,000 tons/year will be enforced by the Division, the monitoring and evaluation plan must be clearly stated in the permit application, with the results provided in the Annual Report, and available to the Division inspectors. The monitoring and evaluation plan should include provisions for monitoring and controlling fugitive dust and coal fine deposition by the Applicant to control pollution attendant to erosion (R645-301-244.100) and to protect water quality (R645-301-526.221 and 526.222) from the open stockpiles of overburden, from coal stockpiles, from crushers, screens, conveyor transfer and drop points. The plan should indicate that the monitoring information and accompanying summary evaluation of emissions will be provided in the Annual Report, and be available to the Division inspectors upon request. [PB]

R645-301-521, The Applicant must change the term *project area* to *permit boundary* on each map in submittal. The term project area is not defined in Section R645.100 of the Utah Coal Rules while the term permit boundary is. •The Applicant must also include all areas under control of the Applicant such as access routes to Kane County Road 136, and any portion of roads that the Applicant has exclusive control over (access route around Alton). [WW, PB]

R645-301-521.120, The Applicant must show on Drawing 1-1 the specific type of buildings and structures that are in or near the permit boundary. The buildings shown on Drawing 1-1 are from a USGS topographic map and the description is generic. The Division needs to know the type of buildings within 1,000 feet of the permit boundary because other regulations direct what actions must be taken based on the type of building. [WW]

R645-301-521.130 through R645-301-521.132 and R645-301-521.141, The Applicant must address plans to build a public road that will bypass the town of Alton to facilitate mining. The Division has received comments from Alton residents that the town officials

have been in negotiations with the Applicant to build a bypass road. The purpose of the bypass road is to route coal truck traffic around Alton. Road construction solely for the purpose of facilitating coal mining is considered "affected area" as defined by R645-100-200 and must be shown on mine maps. [WW, PB]

R645-301-521.132, The Applicant must update all permit area boundaries to show that the access road from the close section of County Road 136 to the mine site will be within the permit area. [WW]

R645-301-521.141, The Applicant must show on Map 5-10 or a similar map the anticipated dates for mining coal from the expansion areas. The Division requests the anticipated dates for acquiring additional subareas, because the preferred reclamation plan is based on additions to the permit area. [WW]

R645-301-521.150, The Applicant states that for much of the permit area the accuracy of the original contour map was 5 feet. The Applicant then interpolated the information to construct 2-foot contours. The Division cannot rely upon contours that the Applicant interpolated. The Applicant must provide the Division with maps and cross sections based on the original topographic maps. [WW]

R645-301-521.190, The Applicant must state in the PAP the legal description of the permit area and include the number of federal, state and fee acres. The Division suggests the information be in table format and be located in Chapter 1 of the PAP. Even if there are no federal or State acreages the table is requested. [WW]

R645-301-523, R645-301-524, R645-301-524.200 and R645-301-121.200, Section 523 states that blasting may be implemented after clearing vegetation. Section 524 suggests that a "cursory analysis" indicates blasting may not be necessary for this mining operation due to the soft clay and shale overburden and due to the mining of the coal from on top of the seam to avoid a wet clay layer below. However, submittal of a blasting plan is required with the permit application in accordance with R645-301-524. Please provide a blasting plan or alternatively, provide more supporting information, such that the Division might provide approval of the plan without blasting, under R645-301-524.220. ie. seismic testing of rock, hardness of coal, etc. [PB, WW]

R645-301-524.300, The Applicant must remove from Section 524.300 – 350 of the PAP the comments about supplying the Division with a blasting plan if five pounds or more of explosives or blasting agent is used. The exclusion applies only to underground mines. The Applicant must supply the Division with a pre-blast survey for any blasting, as part of their blasting plan. [WW]

R645-301-526.116, The application must state whether Alton Coal Resources, LLC. or Kane County will take charge of the County Road 136 re-alignment and subsequent reclamation. • Details of the public road 136 re-alignment must included as an appendix to the application and include the use of cattle guards and fencing in the design

(requested during informal conference comment period) and describe measures for protection of the public during construction. •The reclamation plan narratives and maps must be revised to describe construction of the road in its approximate original alignment. [PB,WW]

R645-301-526.220, The application must describe the equipment required for lighting the 24 hour operation and the effect on the night sky as seen from Bryce Canyon National Park and the Dixie National Forest. [PB]• The Applicant must list and show on appropriate maps all minor facilities at the site such as gates, power lines, water lines and sewage lines. In addition, the Applicant should remove the description of the surface facilities and from Section 521.180 and place then in Section 526. [WW]

R645-301-526.222 and R645-301-423, The Applicant must give a detailed description of the specific dust control structures that will be installed to ensure fugitive dust is controlled. [WW, PB]

R645-301-527.100, The Applicant must state specifically which roads will be classified as primary roads and which roads will be classified as ancillary. The Division will not accept a blanket statement that all future roads will be ancillary. In addition, some roads that are not used to haul coal or spoil might be primary roads. In addition, the Applicant must also classify the road that connects the site with Kane County Road 136. [WW]

R645-301-527.220, The Applicant should modify the comment in Section 527.200 of the PAP that "As currently planned, no natural drainage ways will be altered or relocated due to road construction," to acknowledge that were will be a permanent diversion in Lower Robinson Creek to allow for maximum economic recovery, but not to facilitate road construction. [WW]

R645-301-535.140, In Section 528.310 and 535.100, the Applicant states that spoil will be placed in lifts not to exceed four feet in thickness and meet a 90% compaction based on the standard Procter tests. The Applicant needs to provide the Division with the specifications of the equipment that will be doing the compaction. The Division is unaware of any equipment that can compact lifts up to four feet thick and achieve a 90% Proctor. [WW]

R645-301-542.200, The Applicant must include cross sections that show how the site will be reclaimed in the event that the federal leases are not acquired. [WW]

R645-301-542.320, The Applicant must either list in the PAP or show on a reclamation map those facilities that will remain after final reclamation or state specifically in the PAP that all facilities will be removed at final reclamation. [WW]

R645-301-542.600, Maps and narrative in the application must describe reconstruction of County Road 136 to its original alignment as requested by the County. In addition, Applicant must state who will reconstruct those sections of Kane County Road 136 that

will be closed to the public, along with a timetable for reclamation • The Applicant must specifically state which roads will be retained along with the supporting documentation. The Division cannot accept blanket statements about how roads not needed for the postmining land use will be left. [WW]

R645-301-553 and 542.200, The Applicant will describe how and where the overburden will be placed for the initial box cut. • The Applicant must have a specific timetable for completing rough backfilling and grading in the PAP. • The Applicant must provide surveys of coal recovery at the end of each calendar month and show coal recovery on a plan view of the mining area at the end of each calendar month. • The Applicant must provide detailed descriptions of how overburden will be placed and provide documentation of placed backfill volumes, on a monthly basis. • The Applicant must provided rough backfill volumes taken from the survey of contemporaneous cross sections showing toe of backfilled slope on latitudinal and longitudinal basis in relationship to the coal seam being mined. • The Applicant must establish and follow a ground control plan for the safe control of all highwalls, pits and spoil banks, as approved by MSHA under 30 CRF77.1000 and the MSHA approved plan will be included as part of the mining and reclamation plan. • The Applicant has requested a variance from the 180-day requirement for contemporaneous backfilling and grading of the southern pit (69 acres in Phase 3), based upon the continued use of the area as a haul road. While reclaiming the road may not be practical, reclaiming areas away from the road might be feasible. The application should describe a timetable for the requested variance and limit the acreage of variance to that needed for the road. [WW]

R645-301-553.110 and R645-301-553.800, The request for variance from Approximate Original Contour must describe whether the restoration of original drainage patterns can be achieved ((R645-301-762.100) or whether the criteria of R645-301-553.800 apply to this surface mine. Excess spoil should be graded to attain the lowest practical grade (R645-301-553.800) and provide a natural appearance to the contours of the spoil pile which would include irregular slopes and irregular surface such that the reclaimed site is compatible with the natural surroundings (R645-301-412.300) and landscape character as seen from within the Alton amphitheater and from the Paunsaugunt Plateau. [PB, WW]

R645-301-553.130, The Applicant must show that all reclaimed slopes (including those not associated with the excess spoil area) have a safety factor of 1.3 or greater and that the slope angles are less than the angle or repose. The Applicant includes safety factor calculations for the excess spoil areas but did not mention the safety factors in other areas. One way to address the issue is to identify the slopes that would have the lowest safety factors (longest slope and steepest slope) and show that they meet the minimum safety factor requirements. In addition, the Applicant must also state why the reclaimed slope angles are less than the angle of repose. [WW]

R645-301-533.300, The Applicant must state how the impoundments will be protected from rapid drawdown that can occur in earth dams when reductions in the water level produce dangerous changes in pore water pressure. This occurs because the water in the soil tends

to flow back into the reservoir through the upstream face. In this scenario, even a period of some weeks may bring about a 'rapid' change in the pore water pressure distribution. [WW]

R645-301-624, -724, The Applicant needs to show the extent and depth of the proposed pits on the geologic cross sections of Drawings 6-3, 6-7, and 6-8. Also, to more clearly convey the importance of the Sink Valley Fault and associated Tropic Shale ridge in the relationship of the hydrologic systems to the proposed mine, the Applicant needs to show the Sink Valley Fault on several other maps and cross sections, including but not limited to: Drawings 7-1, 7-4, 7-7, 7-12, 5-10, 5-17, 5-18, and 5-19. As an alternative, the Applicant could create new maps and cross sections that clearly show the relationship of the proposed pits to the Sink Valley Fault, the Tropic Shale Ridge, the alluvium, and the springs, wells, and surface water. [JS]

R645-301-720, A complete search of the water rights needs to be conducted and submitted in a table that identifies the water right, type of water right, the amount of the right, reported, ownership and status. [DD]

R645-301-722.100, The relationship of the alluvial ground-water table to wells and springs in and adjacent to the NW1/4 of Sec 29 is crucial in understanding the PHC of the proposed mining operation. The applicant must include a series of contour maps or cross section showing the progressive changes in the water table during the pump drawdown test. • The applicant needs to provide maps and cross sections depicting (1) the relationship of water table(s) and potentiometric surface(s) to ground-surface elevations, and (2) seasonal variations in head in the various aquifers. [JS]

R645-301-722.300, The Applicant needs to clarify the difference between the boreholes shown on Drawing 7-2 and those on Drawing 7-12 and why some are considered sources for baseline information while others are not.

- This need for clarification also applies to the narrative for this section and Section 724.100.
- The difference between the boreholes and wells in Tables 7-1 and 7-2 needs to be clarified. [JS]

R645-301-722.400, The Applicant must distinguish water wells from other wells and boreholes on Drawings 7-2 and 7-12. [JS]

R645-301-724, The application must be consistent when using terms for baseline monitoring and operational monitoring. i.e. discharge and operational laboratory water quality measurement terms; discharge and field water quality measurement terms. • Identify who owns the water right on well Y-61. • Illustrate all wells with water rights on Drawing 7-3. [DD]

R645-301-724.100, The area covered by the seep and spring survey in Appendix 7-1 needs to be shown on a map or otherwise clearly identified. [JS] •Mining in the lower part of Section 30 will destroy wells Y-102, C2, C7, C8, and C9 that lie within the Sink Valley

groundwater trough. Groundwater monitoring should be established in the lower part of sink valley to establish water quality changes during operational and reclamation phases. • Consolidate well information into a table so it can be more readily accessed. In the well table: show all wells noting which are in the database and which are in Appendix 7-1; show which ones are monitored; show which ones have water rights; show ownership; show collar elevation; show ground elevation; show depth to water from ground; show elevation of water; state which map a well is located on; and state how the wells are monitored (i.e. field parameters, quality parameters, elevation). • Consolidate spring information into a table so it can be more readily accessed. In the spring table: show all springs; indicate which are monitored; indicate which have water rights; indicate ownership; indicate flow range; state which map a spring is located on; and state how the springs are monitored (i.e. field parameters, quality parameters, flow). •Explain the negative values submitted to the DOGM water quality database for well Y-61. •Describe how the piezometric surface was derived with a paucity of well data on the west and north side of the permit. •Show the seasonal variation of ground water on a map for the entire permit area and adjacent area. [DD]

R645-301-724.500, The applicant notes that after the pump on Y-61 was stopped at the end of the 28-hour pumping test, spring discharge rates and water levels in alluvial monitoring wells recovered to approximate pre-test levels: the data in Appendix 7-1 do not show this, the measurements ending after only 30 hours for SP-20 and SP-14, 29 hours for C3-40, 28 hours for C2-40, and not even running to the end of the pumping period for SP-8, C4-30, and SS-30. The applicant needs to provide the data for the complete recovery period, or at least include the next quarterly measurement to show the approximate extent of recovery. [JS]

R645-301-727, The application must include a copy of the written agreement with Richard and Alecia Dame that allows access to well Y-61 on the Dames' property. •The application must include a copy of the agreement with the town of Alton to transfer the point of diversion for 50 acre-feet of water for the Applicant's use to Y-61. • Indicate whether the Utah Division of Water Rights has approved the transfer of water from well Y-61. [JS, DD]

R645-301-728.310 The applicant has not submitted sufficient information to show the hydrologic balance will be maintained. Geologic information identifies a hydrologic barrier between the Sink Valley aquifer and the proposed mine pit. Information presented in the Petersen Hydrologic Report Figures 6d, 6e, and 6f shows the level of groundwater at different monitoring sites in Sink Valley. Mining of the pit will remove some of the barrier that contains the groundwater in Sink Valley. Extending the cross-sections westward to include the mine pit will portray the reduction of the hydrologic barrier and potential change of the groundwater level. The applicant shall supply cross-sections that depict the relationship between the mine pit and Sink Valley trough, and show the expected change in the groundwater head as a result of mining. [DD]

R645-301-728.332, -121.200, The Applicant needs to identify where in the application the following can be found (in reference to the PHC):

- geochemical data that indicate the potential for AMD and toxic drainage is low, and
- an analysis or discussion of the data, especially with regard to SAR and iron, barium, chromium, copper, lead, manganese, and zinc in the overburden. [JS, PB]

R645-301-728.333, Flooding of pit mines by heavy precipitation is a known occurrence at open cast mines and a real possibility at the Coal Hollow Mine. The mine does not anticipate water entering the pit from adjacent strata, but this may prove to be incorrect. The mine needs a plan for pumping and disposing of water from the pit. • The application needs to quantify the rate - at a minimum provide a reasonable worst-case estimate - at which alluvial ground water could drain into the mine pits: whether or not removing such water from the pit can potentially cause flooding or stream flow alteration has not been and cannot be analyzed without such information. The applicant needs to provide a basis for the supposition that land management practices in the late 1800s or early 1900s are the reason for the instability of the principle surface drainages in and adjacent to the proposed mine area. The application needs to discuss the potential impact of the Coal Hollow Mine on this instability. • The applicant states in Section 728.333 that lower Sink Valley Wash has a large discharge capacity and conveys large volumes of runoff periodically, yet the applicant asserts in the AVF section that Sink Valley Wash is not a continuous channel. The applicant needs to clarify and discuss this apparent incongruity. • The application needs to quantify the statement that most precipitation waters falling on disturbed areas will be contained in diversion ditches and routed to sediment impoundments that are designed to impound seasonal water and storms. How much water will not be contained in these structures, and what happens to water not entering diversions and ponds? • The application states (Sec 728.334) that irrigation has not occurred during the past 10 years: the applicant needs to provide a basis for this statement. [JS]

R645-301-728.334, The application needs to quantify the potential decreases in alluvial discharge in Area A (that are anticipated to be short lived). There is no quantification or discussion of the assertion. What would be the worst-case scenario, and how would the mine deal with it? [JS]

R645-301-731, The springs proposed for operational and reclamation monitoring are not sufficient by Division standards. The Division will require SP-4, SP-6, SP-8, SP-14, SP-20 and SP-33 be monitored for discharge and water quality during operational and reclamation activities. Springs SP-14, SP-16, SP-19, SP-22 and SP-24 should be monitored for discharge and field parameters, as recommended by the applicant. [DD]

R645-301-731.300, The plan suggests in Section 358.530 that there may be ponds containing hazardous concentrations of acid/toxic forming materials. Please provide a reference to the Sections in the application where further description of the characteristics of the expected hazard can be found. I.e. Does the applicant expect run off from the Tropic

Shale to form saline/sodic ponded water? Also, please provide a reference to the Section of the application that describes the plans for identification, storage and burial of the hazard. • Data in Appendix 6-2 describes unacceptable levels of selenium in the zone below the coal and in the vicinity of CH-06-05, below 35 ft., where either insufficient sample provides no information on selenium levels or high levels of selenium were recorded. Please explain how overburden below 35 ft represented by CH-06 cores analyses and the zone below the coal will be isolated from groundwater during final reclamation. •The plan states overburden will be monitored (Section 232.720) and no poor quality materials will be placed in the upper four feet of reclamation surface (App. 2-1 Section 5, pg. 5-2). The plan must also include a commitment to selectively place overburden having "poor" quality SAR, elevated Selenium, poor pH, and/or unacceptable levels of selenium, boron, or acid forming potential, as defined by Division guidelines, to minimize the potential of contamination of ground and surface water. [PB]

R645-301-731.800, The applicant must provide reclamation designs for the eastern permit boundary where the mining pits meet the undisturbed alluvium. Such designs will specify engineering methods to be used to minimize drainage from the alluvium into the fill in the reclaimed pits, thereby protecting the hydrologic balance in Sink Valley. The applicant should discuss how the pit will be reclaimed to restore the groundwater level in Sink Valley. [JS, DD] • Section 727 and Section 728.340 water rights replacement plans must be further addressed, with regard to the total volume of water available from well Y-61 for this use. [PB]

R645-301-742.312.1, -553.110, - 742.313, - 742.314, The Division sees no purpose or need for the unnatural and potentially unstable proposed final permanent configuration of Lower Robinson Creek, which furthermore does not meet AOC requirements. The applicant must provide a plan to reclaim Lower Robinson Creek to a more natural and stable configuration, which restores or approximates the premining characteristics of the original stream channel and AOC for the area. Increasing sinuosity above that of the current channel in order to reduce the channel gradient might be considered. [JS]

R645-301-745.120, The Application must provide details on reclamation treatments to prevent water infiltration into the fill (see above deficiency under R645-301-731.800). [DD]

R645-301-748, -755, -765, The plans are clear for the method to close wells deeper than 30 feet, but unclear on closure of shallower wells. The application needs a closure plan that clearly includes all wells and boreholes. [JS]

R645-301-750, -121.200, The applicant needs to clarify and provide design and performance specifications as to how ground water encountered in alluvial sediments along the margins of mine pit areas will be drained in advance of mining and during mining through the use of wells, pumps, pipes, ditches or other conveyance methods that will carry these waters away from the mining area. [JS]

R645-302-321.100, the Division continues to evaluate the existence of an AVF in the proposed permit area and has noted that Appendix 7-7 does not include a description of the AVF in

the adjacent area. According to the analysis of historical information on file with the Division and the information in App. 7-7, an AVF is present to the south and west and possibly east of the proposed disturbed area. Appendix 7-7 should be revised to include information for these areas including at a minimum agricultural production and mapping of the extent of the AVF in Kanab Creek and lower Sink Valley. [DD, JH, PB, JS]

R645-302-321.260, Plates 3 and 4 include color infrared aerial imagery taken in July of 2006 and November of 2007. Although the application states that the imagery was used extensively by the researchers in various disciplines, the application needs to include an analysis of the two plates to show late summer and fall differences between upland and valley floor vegetative growth. [JH, PB]

R301-302-321.230, Maps showing the location of each diversion structure for all lands that are currently or were formerly historically flood irrigated on Kanab Creek and Sink Valley Creeks must include information on the alluvial valley floor west of the proposed permit area on Kanab Creek and south of the proposed permit area in lower Sink Valley. [DD, JH, PB, JS]

R645-302-322.230, The applicant shall address whether the operation will cause or present an unacceptable risk of causing material damage to the quantity or quality of surface or groundwater that supplies the adjacent alluvial valley floor of lower Sink Valley and Kanab Creek. Information to be provided should include the volume of water expected to be intercepted during mining and the volume of water currently used in agriculture along lower Sink Valley and Kanab Creek alluvial valley floors. [DD, JH, PB, JS]

R645-302-323.110, The applicant shall show that the proposed operation would not interrupt discontinue or preclude farming on an adjacent alluvial floor in lower Sink Valley and to the west on Kanab Creek. [DD, JH, PB, JS]

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